

**Public Workshop to Discuss Proposed
Amendments to Tables of Maximum
Incremental Reactivity Values**

April 23, 2003

Research Division
Stationary Source Division
California Air Resources Board

Background

- Board approved amendments to the Aerosol Coating Products Regulation on June 22, 2000
 - Also approved new subchapter containing maximum incremental reactivity (MIR) values
- Legally effective on July 18, 2001
- Established reactivity limits for 36 coating categories, based on MIR scale

**Board Resolution and Directive
to Executive Officer**

- Review MIR values 18 months after effective date of amendments
 - And every 18 months thereafter
 - Make revisions, if necessary
- Directed amendments to update the Tables of MIR Values to be conducted through an Executive Officer Public Hearing

Current Tables of MIR Values

- Based on the work of Dr. William Carter at UCR
 - Section 94700: MIR values for individual compounds
 - Section 94701: MIR values for hydrocarbon solvents

Using the MIR Values

- MIR values dated July 18, 2001 used to calculate PWMIR values for aerosol coatings
- MIR values for aerosol coatings unchanged until June 1, 2007
- Only new compounds added to existing Table can be used in aerosol coatings

Section 94701: MIR Values for Hydrocarbon Solvents

- ARB developed method for assigning MIR values for hydrocarbon solvents
 - Separate table of 24 bins based on Dr. Carter's work at UC Riverside
 - MIR values for bins are based on average boiling range and aromatic content of hydrocarbon solvents
 - Bin MIR values reviewed by Dr. Carter

Why Update MIR Values?

- Board resolution requires us to review the list every 18 months.
- Preliminary calculation indicates some of MIR values have changed non-negligibly.
- Over 100 compounds have been added to the SAPRC mechanism.
- Ensure continuous use of “best science” in regulations.
- Staff determined that the update is appropriate.

Summary of MIR Review

- The MIR values reviewed by Dr. Carter
- No major revisions on the chemical mechanism (SAPRC) and the reactivity calculation scenarios or procedures
- Some corrections or modifications to some mechanisms, emissions assignments, and files and software programs
- 106 new compounds or mixtures added

Summary of MIR Review-2

- Among 670 VOC compounds or mixtures, MIR values changed:
 - > 10% for 14 compounds
 - > 5% for 26 compounds
 - > 1% for 305 compounds
 - < 1% for the remaining compounds
- Continuous use of upper limit estimates recommended
- Only one compound (n-pentadecane) used as surrogate for bin system development

Regulatory Development Process

- Public outreach
 - Public workshop (April 23, 2003)
 - Reactivity Research Advisory Committee
 - Other stakeholder meetings
- Public comments (May 23, 2003)
 - Deadline for additional new compounds with associated MIR value
- Staff report (July 2003)
- Executive Office Public Hearing (Sept. 2003)

Staff Report Outline

- Proposed amendments to the regulation
- Effects of the proposed amendments
- Compliance with the proposed amendments
 - Impacts on existing bin system
 - Impacts on existing products
- Economic impact
- Environmental impact

Executive Officer Public Hearing

- Technical nature of proposed amendments
- Same regulatory process required as for Board hearing
- Executive Officer conducts the hearing

Future Activities

- Currently surveying various consumer product categories
 - Will evaluate feasibility of reactivity-based regulation for some categories
 - Updated MIR values would be used as basis
- Evaluating feasibility of reactivity-based Suggested Control Measure for architectural coatings

Useful Information

- The EPA's Advanced Notice of Proposed Rulemaking on revised VOC policy
- Other reactivity-based regulations
 - Clean Fuel and Low Emission Vehicle regulations (amended in Nov. 2001)

Useful Web Sites

- Reactivity Program
<http://www.arb.ca.gov/research/reactivity/reactivity.htm>
- Consumer Products Program
<http://www.arb.ca.gov/consprod/consprod.htm>
- Low Emission Vehicle Program
<http://www.arb.ca.gov/regact/levii01/levii01.htm>
- Architectural Coatings Program
<http://www.arb.ca.gov/coatings/arch/arch.htm>

Comments?

Calculating Product-Weighted MIR



Contents	Weight Fraction	MIR	Weighted Reactivity
acetone	0.300	0.43	0.129
toluene	0.150	3.97	0.596
propane	0.200	0.56	0.112
xylene	0.050	7.37	0.369
butane	0.200	1.33	0.266
solids	0.100	0	0.000
Total	1.000		1.472

Product MIR= 1.47 g O₃/g product
